Final Revised Background Information

History of the Maricopa County PM_{10} Nonattainment Area

In 1979, the U.S. Environmental Protection Agency (EPA) formally designated a portion of Maricopa County, Arizona as a nonattainment area for particulate matter.

In 1991, the EPA designated approximately 2,880 square miles in Maricopa County and 36 square miles in Pinal County (Apache Junction) as a moderate PM_{10} nonattainment area under the 1990 Clean Air Act (CAA) amendments.[1] The Maricopa County PM_{10} Moderate Nonattainment Area State Implementation Plan (SIP) was submitted to the Environmental Protection Agency (EPA) on November 15, 1991. EPA deemed the plan incomplete in March 1992. Revisions to the moderate plan were submitted on August 16, 1993, and March 3, 1994. The 1994 revision concluded that both the annual and 24-hour PM_{10} national ambient air quality standards (NAAQS) would continue to be exceeded despite the implementation of reasonably achievable control measures (RACM). A modeling demonstration that attainment was impracticable was performed for the annual standard, but not for the 24-hour standard. An accurate assessment of the causes of the historical 24-hour exceedances was not possible because the sources of PM_{10} emissions that caused the exceedances appeared to be local in nature, and site-specific emissions data were not available on the days of those exceedances. On April 10, 1995, (60 FR 18010), EPA approved the revised moderate area plan.

On May 1, 1996, the Arizona Center for Law in the Public Interest (ACLIPI) filed in the United States Court of Appeals for the Ninth Circuit a petition for review of EPA's April 10, 1995 approval of the State's PM_{10} moderate area plan [*Ober v. EPA,* 84F.3d 304 (9th Cir.1996)]. The Ninth Circuit Court ruled that EPA's approval of the moderate plan was improper in part because the State failed to include an analysis of violations of the 24-hour PM_{10} NAAQS and to address requirements triggered by the violations. The Court vacated EPA's approval of the Moderate Area PM_{10} SIP and renewed EPA's federal implementation plan (FIP) obligation, specifically to address SIP deficiencies of 24-hour NAAQS RACM, Reasonable Further Progress (RFP), and attainment demonstration.

In the interim, EPA made a determination that the area had failed to attain the PM_{10} NAAQS by the deadline (December 31, 1994) for moderate areas. On May 10, 1996, the Maricopa County PM_{10}

[1]For the Apache Junction portion, a SIP was submitted to EPA in August, 1999 that identified agriculture as a insignificant source. The SIP is currently under review by EPA.

non-attainment area was reclassified to serious, effective June 10, 1996. The new deadline for attainment became December 31, 2001.

As a result of the Ninth Circuit's ruling, EPA instructed the State of Arizona to submit a limited, locally-targeted plan (microscale plan) meeting both the moderate and serious area requirements for the 24-hour standard by May 9, 1997, and a full regional plan meeting those requirements for both the 24-hour and annual standards by December 10, 1997. As a result of the litigation and the reclassification of the Phoenix area as a serious PM_{10} nonattainment area, both plans were also required to address the best available control measures (BACM), RFP and attainment requirements in the CAA for serious areas. Thus, the microscale and regional plans taken together would satisfy both the moderate area requirements mandated by the court and the serious area planning requirements under CAA § 172 and §188. EPA concluded that since the December 31, 1994, deadline has passed and the Maricopa County area was reclassified, the only attainment deadline currently applicable to the area was the serious area deadline of December 31, 2001.

The microscale study became the basis for the 24-hour Plan. The 24-hour Plan was required to (1) address exceedances of the 24-hour NAAQS that occurred in 1995 at five monitors (Salt River, Maryvale, Gilbert, West Chandler, and East Chandler) during the microscale study; (2) document the development of emissions inventories and air quality modeling to quantify contributions of sources to the exceedances; and (3) identify, document and evaluate all RACM, BACM and other techniques applicable to reduce emissions from the contributing sources; (4) demonstrate attainment of the 24-hour standard by application of RACM, BACM and other controls as soon as practicable but no later than December 31, 2001; (5) contain provisions for quantitative milestones to measure reasonable further progress; and (6) include fully adopted and enforceable control measures with schedules for their implementation.[2]

On May 7, 1997, ADEQ submitted the *Final Plan for Attainment of the 24-hour PM_{10} Standard* (24-hour Plan) to EPA. The plan evaluates attainment of the 24-hour PM_{10} NAAQS at four monitoring locations (Salt River, Maryvale, Gilbert, and West Chandler) in the Maricopa County PM_{10} nonattainment area.[3] The plan showed that 24-hour exceedances at the Salt River site were primarily due to fugitive dust from earth moving, industrial haul roads, unpaved parking lots, and unpaved roads; at the Maryvale site,

[2]Final Plan for Attainment of The 24-Hour PM_{10} Standard, Maricopa County PM_{10} Nonattainment Area. Air Quality Division, Arizona Department of Environmental Quality in Cooperation With Maricopa County Environmental Services Department. May 1997. Appendix A: Maricopa County PM_{10} SIP Microscale Approach Technical Supporting Document. ADEQ and MCESD. May 1997.

[3]The East Chandler site was not included in the analysis because reliable information regarding emission sources was not available.

from disturbed cleared areas; at the Gilbert site from agricultural field aprons and unpaved parking lots; and at the West Chandler site, from agricultural fields, agricultural field aprons, vacant lots, and disturbed cleared areas. The plan was able to show attainment at these localized sites by identifying appropriate RACM and BACM for these specific types of fugitive dust sources. However, the localized nature of the microscale plan precluded a determination regarding the extent to which the identified RACM and BACM should be implemented to address emissions over a larger geographic area, as well as an assessment of the overall effectiveness of these measures when applied throughout the nonattainment area as a whole. These determinations were addressed in the regional plan submitted in February 2000.

The 24-hour Plan described improvements to the implementation of Maricopa County Environmental Services Division (MCESD) Rule 310 (Open Sources of Fugitive Dust). The improvements were primarily targeted at sources subject to permitting (such as earth moving, disturbed cleared roads, and industrial haul roads) under MCESD's rules. For non-permitted sources (such as vacant lots, agricultural sources, unpaved parking lots, and unpaved roads), the plan did not provide for proactive implementation of controls. The plan contained sufficient controls to show attainment at the Salt River and Maryvale sites but also showed that additional controls were needed before attainment could be demonstrated at the West Chandler and Gilbert sites.

On August 4, 1997, (62 FR 41856) EPA approved in part and disapproved in part the 24-hour Plan submitted by Arizona Department of Environmental Quality (ADEQ) on May 7, 1997. EPA approved the attainment and RFP demonstrations for two sites (Salt River and Maryvale) and disapproved them for two other sites (West Chandler and Gilbert). EPA also approved the RACM/BACM demonstrations in the 24-hour Plan for the significant source categories of disturbed cleared areas, earth moving, and industrial haul roads but disapproved them for agricultural aprons, vacant lands, unpaved parking lots, and unpaved roads.

EPA also approved the following commitments as elements of the 24-hour Plan:

1. The resolution by the county to improve the administration of its fugitive dust control program.
2. The resolutions of intent for Maricopa County and the cities to work cooperatively to control the generation of fugitive dust pollution.
3. MCESD's Rule 310 (Open Fugitive Dust Sources), Rule 311 (Particulate Matter from Process Industries) and Rule 316 (Nonmetallic Mineral Mining and Processing).[4]

[4]In addition, EPA found that the 24-hour Plan: (1) provides the necessary assurances that the state and local agencies have adequate personnel, funding and authority under state law to carry out the submitted microscale plan; and (2) includes an adequate enforcement program, as required by CAA sections 110(a)(2)(E)(i) and 110(a)(2)(C).

Because EPA was unable to fully approve the State's 24-hour Plan, EPA was required by a U.S. District Court order to promulgate a FIP by July 18, 1998 that addressed the CAA's moderate area requirements for RACM, RFP and attainment for both the 24-hour and annual standards [*Ober v. Browner, CIV 94-1318 PHX PGR (D. Ariz.)*]

On August 3, 1998, (63 FR 41326) EPA promulgated a FIP to address the moderate area PM_{10} requirements for the Maricopa County PM_{10} nonattainment area. As part of the FIP, EPA promulgated a fugitive dust rule to control PM_{10} emissions from vacant lots, unpaved parking lots and unpaved roads, and also promulgated an enforceable commitment to ensure that RACM for agricultural sources be proposed by September 1999, finalized by April 2000 and implemented by June 2000. In addition, EPA finalized its disapproval of the Arizona moderate area plan's RACM, RFP, and impracticability demonstrations because those demonstrations did not adequately address the Act's moderate area PM_{10} requirements.

To address the unpaved roads, unpaved parking lots, and vacant lots, EPA worked with Maricopa County to strengthen Rule 310, Fugitive Dust Sources (63 FR 15921). In recognition of the need to address agriculture's contribution to PM_{10}, EPA, the local agricultural community, and ADEQ began a cooperative working relationship to develop strategies to address PM_{10} emissions from agricultural lands within the nonattainment area. On May 29, 1998, Arizona Governor Hull signed into law Senate Bill 1427 (SB 1427) (see Attachment 1), establishing an agricultural best management practices (BMPs) committee (Arizona Revised Statute [ARS] § 49-457) (see Attachment 2). The Committee was mandated to adopt a rule by June 10, 2000, for an agricultural general permit.

On September 4, 1998, ADEQ submitted ARS § 49-457 to EPA for inclusion in the Arizona SIP for the Maricopa County PM_{10} nonattainment area as meeting the RACM requirements of CAA section 189(a)(1)(C) and requested that EPA approve the legislation to replace the FIP commitment.

In September 1998, in accordance with ARS § 49-457, the Governor's Agricultural BMP Committee was established and began meeting. The Committee is composed of five local farmers, the director of ADEQ, the director of Arizona's Department of Agriculture, the state conservationist for the Natural Resources Conservation Service (NRCS), the dean of the University of Arizona College of Agriculture, and a soil scientist from the University of Arizona. The Committee's charge was to develop an agricultural general permit specifying best management practices for regulated agricultural activities to reduce PM_{10} emissions.

On December 30, 1998, (63 FR 71815), EPA proposed to approve the legislation (ARS § 49-457) as meeting the RACM requirements of the CAA for agricultural sources in the Phoenix area. EPA also

proposed to withdraw the FIP commitment to adopt and implement RACM for agricultural fields and aprons.

On June 29, 1999, (64 FR 34726), EPA approved the revision to the Arizona SIP reflecting the agricultural best management practices legislation (ARS § 49-457) as meeting the RACM requirements of the Act, EPA also withdrew the FIP commitment to adopt and implement RACM for agricultural fields and aprons in the Maricopa County area.

On February 16, 2000, ADEQ submitted the *Revised Maricopa Association of Governments (MAG) 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area* as a revision to the Arizona SIP. The plan addressed the outstanding FIP issues related to vacant lots, unpaved parking lots and unpaved roads by including a more stringent Rule 310 and 310.01.

On April 13, 2000, (65 FR 19964), EPA proposed to approve the serious area air quality plan for attainment of the annual PM_{10} standard in the Maricopa County nonattainment area and to grant Arizona's request to extend the attainment date for the annual PM_{10} standard from December 31, 2001 to December 31, 2006.[5] EPA also proposed to approve Maricopa County's fugitive dust rules, Rule 310 Fugitive Dust Sources (adopted February 16, 2000) and Rule 310.01 Fugitive Dust from Open Areas, Vacant Lots, Unpaved Parking Lots, and Unpaved Roadways (adopted February 16, 2000). EPA also proposed to approve the revised Maricopa County Residential Woodburning restriction ordinance (adopted November 17, 1999).[6]

In May 2000, the Agricultural BMP Committee adopted the agricultural PM_{10} general permit, which became effective by rule on May 12, 2000 (Arizona Administrative Code [AAC], R18-2- 610 and 611); see Attachment 3). The Committee identified 34 BMPs that focus on feasible, effective, and common sense practices while minimizing negative economic impacts on local agriculture. The general permit requires that a commercial farmer implement at least one BMP to control PM_{10} for each of the following three categories: tillage and harvest, non-cropland, and cropland. The general permit requires a commercial farmer to comply by December 31, 2001.

[5]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. February 2000.

[6]Although the regional plan addresses both the annual and 24-hour PM_{10} standards, EPA did not propose any actions regarding the plan's compliance with the statutory requirements relating to the 24-hour standard because the state was still working on quantifying emission reductions for the agricultural BMPs.

In July 2000, ADEQ submitted the rule (AAC R18-2-610 and 611) package to EPA as a SIP revision. The submittal was deemed complete and is under review for further action.

At this time, ADEQ is submitting the remaining portions of the SIP revision package:

A) demonstration of attainment of 24-hour NAAQS;
B) demonstration that the best available control measure (BACM) [Clean Air Act (CAA) § 189 (b)(1)(B)] and most stringent measures requirements [CAA § 188 (e)] have been met;
C) clarification of contingency measures;
D) description of the public education initiative; and
E) demonstration that the CAA Section §110 requirements have been met.

A) Demonstration of Attainment of 24-Hour NAAQS

Previous Modeling

Chapter Eight of the Revised MAG 1999 Plan includes several of the key elements of the PM_{10} modeling process, including an assessment of future air quality conditions, a summary of committed control measures impacts, and projected attainment status.[7] An assessment of the air quality conditions involves not only the examination of existing air quality data describing the major contributors to the PM_{10} problem, but also the development of projections which may be used to predict future air quality conditions. More specifically, these projections are used to determine the reduction needed to attain the annual and 24-hour NAAQS and the potential effectiveness of various control strategies in reducing PM_{10} emissions and concentrations.

A detailed description of the regional air quality modeling analysis conducted for the Revised MAG 1999 Plan is presented in the Revised Technical Support Document.[8] A detailed description of the microscale air quality modeling analysis conducted for the Revised MAG 1999 Plan is presented in *Evaluation for*

[7]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. February 2000.

[8]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Appendices Volume Two. Appendix A, Exhibit 7: Revised Technical Support Document for Regional PM_{10} Modeling in Support of Revised MAG 1999 Serious Area Particulate Plan For PM_{10} For the Maricopa County Nonattainment Area, Chapter VI, February 2000.

Compliance with the 24-Hour PM_{10} Standard for the West Chandler and Gilbert Microscale Sites (1999 Evaluation).[9]

MAG completed air quality modeling on August 29, 1997. The modeling did not demonstrate attainment by December 31, 2001, with the committed control measures. The "modified rollback" used in the modeling completed August 29, 1997, was replaced with the UAM-LC analysis, a more sophisticated modeling approach. MAG revised the Draft Technical Support Document for Regional PM_{10} Modeling dated October 1997 to reflect the UAM-LC modeling approach. The revised air quality modeling analysis supports the previous modeling conclusion that attainment by December 31, 2001, is impracticable. The revised modeling demonstrated attainment of the annual PM_{10} standard of 50 micrograms per cubic meter ($\mu g/m^3$) by the extension date of December 31, 2006. The Revised MAG 1999 Plan UAM-LC modeling showed the maximum annual average PM_{10} concentration simulated for the committed measure package was 49.68 $\mu g/m^3$ for 2006. In addition, the maximum 24-hour PM_{10} concentration predicted was 112.6 $\mu g/m^3$ in 2006.[10] The maximum 24-hour PM_{10} concentration of 112.6 $\mu g/m^3$ was reported for all days modeled in the regional analysis, excluding those days included in the ADEQ microscale study (April 9, 1995).

The results of the Revised MAG 1999 Plan UAM-LC Maximum Annual Average and 24-hour PM_{10} concentrations in the Maricopa County area for the 2006 committed measure package for the Gilbert and West Chandler sites are summarized below:

Sites	**Annual PM_{10} Concentrations in 2006 (std. - 50 $\mu g/m^3$)**	**24-Hour PM_{10} Concentration in 2006 (std. - 150 $\mu g/m^3$)**
Gilbert	38.26 $\mu g/m^3$	80.49 $\mu g/m^3$
West Chandler	37.84 $\mu g/m^3$	68.24 $\mu g/m^3$

[9]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Appendices Volume Four. Appendix C, Exhibit 3: Evaluation for Compliance with the 24-hour PM_{10} Standard for the West Chandler and Gilbert Microscale Sites. Arizona Department of Environmental Quality. June 1999.

[10]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Appendices Volume Two. Appendix A, Exhibit 7: Revised Technical Support Document for Regional PM_{10} Modeling in Support of Revised MAG 1999 Serious Area Particulate Plan For PM_{10} For the Maricopa County Nonattainment Area. Chapter VI. February 2000. pp VI-11.

The 1995 ADEQ microscale study addressed attainment of the 24-hour standard at the microscale sites (Salt River, Gilbert, Maryvale, and West Chandler). The microscale study was reported in the *Plan for Attainment of the 24-hour PM_{10} Standard (24-hour Plan).*[11] The 24-hour Plan demonstrated that implementation of the committed control strategies provided for the necessary PM_{10} emissions reductions at the Salt River and Maryvale sites to demonstrate attainment of the 24-hour PM_{10} NAAQS. The other two sites, West Chandler and Gilbert, however, were influenced by sources whose proposed controls were inadequate at the time to achieve the necessary level of emissions reductions to attain the standard. At both West Chandler and Gilbert, emissions from agricultural fields and aprons contributed to PM_{10} exceedances. Exceedances at the Gilbert site were also influenced by emissions from unpaved parking areas.

Because the Agricultural BMP rulemaking process was not yet completed at the time of the June 1999 analysis, ADEQ estimated the potential types of agricultural control measures and their effectiveness in its *Evaluation for Compliance with the 24-hour* PM_{10} *Standard for the West Chandler and Gilbert Microscale Sites (1999 Evaluation),* which was incorporated into Revised MAG 1999 Plan.[12] The 1999 Evaluation projected PM_{10} emission reductions due to: (1) strengthening and increased enforcement of MCESD Rule 310, and (2) future implementation of agricultural BMPs. ADEQ attempted to bracket the range of agricultural BMPs by identifying a "low end" control measure scenario (the minimum emissions reductions expected) and a "high end" control measure scenario (maximum emission reductions expected), then modeled both ranges for agricultural fields and agricultural aprons.

Dispersion modeling completed for the 1999 Evaluation verified attainment of the 24-hour PM_{10} standard for the Maricopa County PM_{10} nonattainment area could not be demonstrated by 2001, but could be achieved by December 31, 2006. The modeling was based on implementation of (1) MCESD's Rule 310 with 90 percent control measure efficiency for housing and road construction; (2) control measures for vacant lots with a 70 percent control measure efficiency; and (3) control measures for agricultural fields and agricultural aprons with a 58 percent control measure efficiency.[13] The maximum 24-hour PM_{10} concentration predicted by ADEQ in 2006 was 149.3 $\mu g/m^3$ at the West Chandler monitor site.

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[11]Final Plan for Attainment of the 24-Hour PM_{10} Standard, Maricopa County PM_{10} Nonattainment Area. Air Quality Division, Arizona Department of Environmental Quality in Cooperation With Maricopa County Environmental Services Department. May 1997.

[12]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area, February 2000. Appendices Volume Four. Appendix C, Exhibit 3: Evaluation for Compliance with the 24-hour PM_{10} Standard for the West Chandler and Gilbert Microscale Sites, Arizona Department of Environmental Quality, June 1999.

[13]Ibid., pp 3-7 thru 3-9.

For the West Chandler site, Industrial Source Complex Short Term (ISCST) modeling was utilized and predicted attainment of the 24-hour PM_{10} standard in the Year 2006 at 149.3 Fg/m^3. This was based on implementation of agricultural BMPs with a 58 percent control measure efficiency for agricultural fields and agricultural aprons, and implementation of MCESD's Rule 310 with 90 percent control measure efficiency for housing and road construction, and a 70 percent control measure efficiency for vacant lots.

For the Gilbert site, ISCST modeling predicted attainment of the 24-hour PM_{10} standard in the Year 2006 at 142.1 Fg/m^3. Control measures applied included implementation of agricultural BMPs with a 20 percent control measure efficiency for agricultural aprons, and implementation of MCESD's Rule 310 with a 70 percent control measure efficiency for vacant lots and a 50 percent control measure efficiency for unpaved parking lots.

Agricultural BMP Modeling

In November 2000, the *Technical Support Document for Quantification of Agricultural Best Management Practice* (TSD) was prepared.[14] The TSD supports MAG and ADEQ's previous work by assessing the emissions from various agricultural practices and the potential impacts of agricultural BMPs contained in AAC R18-2-611 for the April 1995 microscale design day. The process used to quantify emission reductions was:

1. Determination of how each BMP would be applied to the major crops in Maricopa County;
2. Ranking of the BMPs based upon the likelihood of their use;
3. Application of control efficiencies for individual BMPs; and
4. Estimation of emission reductions from application of BMPs.

The agriculture related emission reduction was calculated by totaling the reduction expected from agricultural lands going out of production (i.e., approximately 37 percent of the daily emissions) to the reductions expected by applying a range of BMPs to the remaining agricultural land. Emission reductions for a specific BMP were estimated by applying control efficiencies (i.e., minimum, maximum, and mid-point) to the daily emissions for the crops subject to that BMP. An overall emission reduction of 60.3

[14]Technical Support Document for Quantification of Agricultural Best Management Practices, Final. June 8, 2001. URS Corporation and Eastern Research Group, Inc.

percent from the 1995 design-day emission is projected using the mid-point BMP reduction.[15] (See Attachment 4, Supporting Documentation for SIP Emission Reduction Credits for Agricultural BMPs)

B) Best Available Control Measures (BACM) and Most Stringent Measures (MSM) Demonstration

Section189 (b)(1)(B) of the Clean Air Act (CAA) requires serious areas to implement best available control measures (BACM) for significant sources. In the event a serious area cannot demonstrate attainment by the required deadline and requests an extension of the deadline, the most stringent measures (MSM) requirement under CAA Section 189 (e) must also be met.

EPA defines BACM (65 FR 19968, April 13, 2000) to be, among other things, the maximum degree of emission reduction achievable from a source or source category that is determined on a case by case basis considering energy, economic and environmental impacts. EPA proposed to define a "most stringent measure" in a similar manner: the maximum degree of emission reduction that has been required or achieved from a source or source category in other SIPs or in practice in other states and can feasibly be implemented in the area. Determining MSM follows a process similar to determining BACM but with one additional step, to identify the potentially most stringent measures in other implementation plans for each significant source category and for each measure determine their technological and economic feasibility for the area.

BACM - Identification of Agricultural Related Sources and Potential Control Measures

The Revised MAG 1999 Plan provides an overview of the procedures that EPA specified for determining BACM, along with the process that MAG followed in complying with that guidance.[16] MAG first focused on evaluating significant sources of PM_{10} and PM_{10} precursor emissions and developing an emission

[15]Without the 37 percent land use reduction, the overall emission reduction due solely to BMP implementation is projected to be 36.6 percent.

[16]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. February 2000. Chapter Nine.

inventory.[17] The second step specified by EPA focuses on control measure evaluation. This step was addressed in a report by Sierra Research entitled *Particulate Control Measure Feasibility Study*.[18]

Before developing the list of control measures for consideration, Sierra Research identified those source categories that would not require further analysis in the study. The estimated impacts from agricultural harvesting was found to be an insignificant source for both the annual and 24-hour PM_{10} standards. Agricultural tilling, however, was identified as a potential significant source. The objectives of the Sierra Research study were to: 1) review available guidance from EPA and others to identify PM_{10} sources that significantly impact monitoring stations recording violations of the NAAQS; 2) select control measures that are applicable to those sources; and 3) analyze the selected control measures for emission reduction impacts, cost and cost-effectiveness. An index of control measures was prepared and individual measures were screened for applicability in the Maricopa County nonattainment area. The analysis then focused on 41 applicable strategies.

The following five of the 41 potential PM_{10} control measures identified by the Sierra Research study related to agricultural operations:

1. Soil conservation requirements of the U.S. Food Security Act;[19]
2. Restrictions on tilling or soil mulching during high wind events;
3. Fallow field treatment (cover crop or grass revegetation of irrigated fields, maintenance of crop residues on non-irrigated fields, mowing for weed control);
4. Require comprehensive dust control plans for farms larger than 640 acres (including surface treatment, vegetative cover, and windbreaks);
5. Reduce emissions of ammonia and nitrates from agricultural operations.

[17]As documented in Chapter Three of the Revised MAG 1999 Plan, the regional PM_{10} inventory for 1994 was updated with 1995 information.

[18]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area.. February 2000. Appendices Volume Three. Appendix B, Exhibit 5: Particulate Control Measure Feasibility Study: Volumes I and II. Prepared for the Maricopa Association of Governments by Sierra Research. January 1997.

[19]This measure was determined to be not applicable to the Maricopa County area because there is no land within the county subject to the federal requirements.

The third step specified by EPA is the selection of BACM for significant sources. As documented in Chapter Five of the Revised MAG 1999 Plan, this involved the evaluation of various control measures and the development of the Draft Comprehensive List of Measures. To develop the list, MAG utilized the Sierra Research Study, the Governor's Air Quality Strategies Task Force, the Clean Air Act, ARS § 49-402, previous MAG plans, and air quality plans from other U.S. nonattainment areas.

The Draft Comprehensive List was divided into two sections: New Measures, and Existing Measures Which Could be Considered for Strengthening. Detailed descriptions of these measures can be found in Chapter Five of the Revised MAG 1999 Plan. The following agricultural related measures were identified:

New Measures

1. Cover Crops - planting alternative crops during fallow period
2. Vegetation Establishment - conversion of crops to grassland or trees on land not suitable for continuous cropping
3. Windbreaks - planting trees or grass perpendicular to the prevailing wind
4. Restrictions on Tilling or Soil Mulching During High Wind Events
5. Reduce Emissions of Ammonia and Nitrates from Agricultural Operations
6. Provide for Burial of Whole Stalks During Plowdown (if research documents no increase in spread of plant disease or pests from this practice)
7. Require Comprehensive Dust Control Plans for Farms Larger than 640 Acres - including windbreaks, maintenance of crop residues on non-irrigated fields, mowing for weed control

Existing Measures Which Could Be Considered for Strengthening

8. Soil Conservation Requirements of the U.S. Food Security Act.

Two agricultural measures included in the New Measures List were included in the MAG initial modeling for 2001.[20] Burial of whole stalks during plowdown was estimated to result in a 0.2 percent reduction of PM_{10} emissions in 2001. Restricting tilling or soil mulching during high winds was estimated to result in less than 0.1 percent reduction in PM_{10} emissions in 2001.

[20]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Chapter 5. February 2000. pp. 5-19.

As part of its process to select final BACM measures, MAG worked with stakeholders to review the agricultural related measures in the Draft Comprehensive List. Justification concerning the infeasibility of some of the measures is included in the Revised MAG 1999 Plan.[21] As a result, MAG revised the Suggested List of Measures to include six new agricultural measures:

1. Incentives and Credits for Use of Improved Agricultural Practices
2. Tilling Restrictions on High Wind Days and Tillage Irrigation Where Feasible
3. Reduce Emissions of Ammonia and Nitrates from Agricultural Operations
4. Cooperative Development of Management Practices to Reduce Emission from Agricultural Activities
5. Deep Furrowing of Fallow Fields
6. Provide Burial of Whole Stalks During Plowdown

An earlier BACM analysis for the Maricopa County area was conducted in 1997 by ENSR for the 24-hour standard for the four microscale sites.[22] The analysis consisted of benchmarking technological controls for such sources and an exhaustive library search for documented effectiveness of such controls. Other nonattainment areas in the West were also surveyed for implementation strategies that could be used in Maricopa County.[23]

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[21]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area, February 2000. Appendices Volume Three. Appendix B, Exhibit 8: Recommendation from the Maricopa County Farm Bureau on Agricultural Measures.

[22]Final Plan for Attainment of The 24-Hour PM_{10} Standard, Maricopa County PM_{10} Nonattainment Area. Air Quality Division, Arizona Department of Environmental Quality in Cooperation With Maricopa County Environmental Services Department. May 1997. Appendix B: ENSR Report: Evaluation of Fugitive Dust Control in the Maricopa County PM_{10} Nonattainment Area. March 1997. Document Number 0493-015-500.

[23] 1. Metropolitan Denver/Colorado Air Pollution Control Division;
2. Coachella Valley, California/Coachella Valley cooperative Agreement/South Coast Air Quality Management District (SCAQMD);
3. San Joaquin Valley, California/San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD);
4. Desert Portions of San Bernardino County, California/Mojave Desert Air Quality Management District (MDAQMD);
5. Spokane/Spokane County Air Pollution Control Authority;
6. Salt Lake County, Utah/Utah Department of Environmental Quality; and
7. Clark County, Nevada/Clark County Health District Air Pollution Control Division.

The following table illustrates the potential PM_{10} emission control measures identified by ENSR for agricultural sources contributing to design day exceedances.

Source Category	**Control Measure**
Windblown dust from agricultural fields	Tree windbreaks
	Conservation tilling practices, such as leaving vegetative cover between crops
	Sprinkler irrigation to maintain crust on surface
Windblown dust from agricultural aprons	Tree windbreaks
	Wind fence
	Mulch or vegetative cover
	Chemical stabilizers

In regards to agricultural operations, ENSR found that agencies are generally restricted by state law from requiring agricultural operations to obtain air quality permits. However, two areas, South Coast Air Quality Management District (SCAQMD) and San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD), did have or were planning to implement agricultural related control programs at that time.

In 1997, the SCAQMD's Governing Board adopted revisions to Rule 403 (fugitive dust) and adopted Rule 1186 (paved, unpaved and livestock operations) for fugitive dust control because of the area's recent redesignation to serious. Previously, agricultural operations were exempt from Rule 403, but as of July 1, 1999, agricultural operations exceeding 10 acres within the South Coast Air Basin must implement the conservation practices contained in the Rule 403 Agricultural Handbook or be subject to more restrictive Rule 403 provisions. A self monitoring form documenting sufficient conservation practices must be kept by the farmer. SCAQMD Rule 1186 establishes treatment options for unpaved roads, including unpaved access roads and feed land access areas used by livestock operations.

In 1997, the SJVUAPCD released a revised draft of its 1997 PM_{10} Attainment Demonstration Plan (PM_{10} ADP) designed to show how the San Joaquin Valley will achieve the federal PM_{10} standards by 2006. For agricultural operations, the district identified activities such as land preparation, crop harvest, and confined animal feedlots as significant sources. SJVUAPCD is currently proposing to amend its existing Regulation VIII to BACM and MSM. District staff proposes to develop a single, separate agricultural rule (Rule 8081) to consolidate requirements for agricultural sources. Rule 8081 (Agricultural Sources) would

only address BACM for "off-field" agricultural sources (i.e., unpaved roads, unpaved vehicle and equipment traffic areas, etc.,). On-field agricultural sources (i.e., tilling, land preparation, and harvesting) would be exempt from Rule 8081. SJVUAPCD encourages the owners/operators of on-field agricultural sources to apply voluntary best management practices as outlined by SJVUAPCD and the Natural Resource Conservation Service (NRCS).

Following its research, ENSR categorized recommendations as short-term and long-term. In regards to agricultural operations, ENSR made no short-term recommendations and made the following long-term recommendation:

> *"Explore methods to achieve dust emissions reductions from agricultural operations with other agencies such as the NRCS and Arizona Department of Agriculture."*[24]

BACM - Recommendations from Governor's Agricultural BMP Committee

In September 1998, in accordance with ARS § 49-457, the Governor's Agricultural BMP Committee was established. The Committee is composed of five local farmers, the director of ADEQ, the director of the Arizona Department of Agriculture, the state conservationist for the Natural Resources Conservation Service (NRCS), the dean of the University of Arizona College of Agriculture and a soil scientist from the University of Arizona. The Committee's charge was to develop an agricultural general permit specifying best management practices for regulated agricultural activities to reduce PM_{10} emissions

The Arizona Legislature (ARS § 49-457) defined a BMP for the Maricopa County PM_{10} nonattainment area as a technique verified by scientific research, that on a case-by-case basis is practical, economically feasible and effective in reducing PM_{10} from a regulated agricultural activity.

The Governor's Agricultural BMP Committee established an Ad-hoc Technical Group to develop a comprehensive list of potential BMPs for relevant sources in the Maricopa County PM_{10} nonattainment area. Participants included the Natural Resources Conservation Service (NRCS), Agricultural Research Service, University of Arizona College of Agriculture and Life Sciences, Arizona Department of Environmental Quality, University of Arizona Cooperative Extension, Western Growers Association,

[24]Final Plan for Attainment of The 24-Hour PM_{10} Standard, Maricopa County PM_{10} Nonattainment Area. Air Quality Division, Arizona Department of Environmental Quality in Cooperation With Maricopa County Environmental Services Department. May 1997. Appendix B: ENSR Report: Evaluation of Fugitive Dust Control in the Maricopa County PM_{10} Nonattainment Area. March 1997. Document Number 0493-015-500. Page 5-4.

Arizona Farm Bureau, Arizona Cotton Growers Association, Arizona Farm Bureau Federation, and Environmental Protection Agency Region IX.

The objectives of the Ad-hoc Technical Group were to: 1) review wind erosion and dust control literature, technical documents, and practices in other geographic areas of the western United States; 2) develop a list of practices that would reduce PM_{10} from tillage and harvest activities, cropland, and non-cropland; and 3) evaluate the list of practices to determine suitability for Arizona soils, agriculture, and environment; field effectiveness in emission reduction impacts; costs and cost-effectiveness. The main areas evaluated were:

- NRCS Technical Guide
- South Coast Air Quality Management District
- San Joaquin Valley Unified Air Pollution Control District
- University of Arizona Cooperative Extension Mohave Valley research project
- University of Washington Columbia Plateau research project
- ENSR 1997 report
- Sierra Research 1997 study

The result of this approach was the following comprehensive list of potential practices for further consideration:

1. Access Restriction
2. Access Road
3. Air Fan Deflectors
4. Artificial Wind Barriers
5. Chiseling/Subsoiling
6. Conservation Cover
7. Conservation Crop Rotation
8. Controlled Drainage
9. Cover and Green Manure Crop
10. Critical Area Planting
11. Cross Wind Ridges
12. Cross Wind Stripcropping
13. Cross Wind Trap Strips
14. Dust Suppressants (other)
15. Dust Suppressants (inorganic)
16. Dust Suppressants (organic)
17. Emergency Tillage
18. Fence
19. Field Border
20. Filter Strip
21. Firebreak
22. Forage Harvest Management
23. Harvest & Equipment Modification
24. Heavy Use Area Protection
25. Hedgerow Planting
26. Herbaceous Wind Barriers
27. Irrigation Land Leveling
28. Irrigation System, Sprinkler
29. Irrigation System, Surface/Subsurface
30. Irrigation System, Trickle
31. Irrigation Water Management
32. Land Smoothing
33. Limited Activity with High Wind Event
34. Modifying Egress/Ingress
35. Mulching
36. Nutrient Management
37. Pasture/Hayland Planting
38. Pest Management
39. Precision Land Forming
40. Prohibition of Tillage
41. Reduce Vehicle Speed
42. Residue Management, Mulch-till
43. Residue Management, No-till, Strip-till
44. Residue Management, Ridge-till
45. Residue Management, Seasonal
46. Row Arrangement
47. Soil Salinity Management
48. Spoil Spreading
49. Stripcropping, Field
50. Surface Roughening
51. Tillage Equipment Modification
52. Tillage Pre-irrigation
53. Track-out Control System
54. Track-out Prevention
55. Tree/Scrub Establishment
56. Tree/Shrub Pruning
57. Unpaved Road Treatments
58. Use Exclusion
59. Vehicle Restriction for Access/Trip
60. Waste Management System
61. Waste Utilization
62. Watering
63. Wildlife Upland Habitat Management
64. Windbreaks/Shelterbelt Establishment
65. Windbreak/Shelterbelt Renovation.

Most methods for controlling PM_{10} and dust emissions from agriculture parallel controls for wind erosion. These methods are based on principles that contain or slow soil movement from fields. In an effort to

address agriculture's contribution to PM_{10} in the Maricopa County area and lacking definitive research to determine the most effective means, the Governor's Agricultural BMP Committee with the assistance of the Ad-Hoc Technical Group identified a wide range of flexible and adaptable management practices that would either impact wind speed, soil organic matter content, soil moisture, or soil surface. The Governor's Agricultural BMP Committee thoroughly reviewed the practices presented by the Ad-hoc Technical Group and identified the following 34 BMPs that focus on feasible, effective, and common sense practices while minimizing negative impacts on local agriculture. The remaining potential practices were not included for a variety of reasons, including implementation impracticability for the Maricopa County area, no identifiable relation to PM_{10} emission reductions, incorporation into another practice included in the general permit, not cost effective, or not applicable to agricultural activities. Attachment 8 shows in tabular form the specific reasons practices were not included in the Agricultural PM_{10} General Permit.

Tillage and Harvest

1. Chemical Irrigation
2. Combining Tractor Operations
3. Equipment Modification
4. Limited Activity during a High-Wind Event
5. Multi-Year Crop
6. Planting Based on Soil Moisture
7. Reduced Harvest Activity
8. Reduced Tillage System
9. Tillage Based on Soil Moisture
10. Timing of a Tillage Operation

Non-Cropland

11. Access Restriction
12. Aggregate Cover
13. Artificial Wind Barrier
14. Critical Area Planting
15. Manure Application
16. Reduce Vehicle Speed
17. Synthetic Particulate Suppressant
18. Track-out Control System
19. Tree, Shrub or Windbreak Planting
20. Watering

Cropland

21. Artificial Wind Barrier
22. Cover Crop
23. Cross-Wind Ridges
24. Cross-Wind Strip-cropping
25. Cross-Wind Vegetative Strips
26. Manure Application
27. Mulching
28. Multi-Year Crop
29. Permanent Cover
30. Planting Based on Soil Moisture
31. Residue Management
32. Sequential Cropping
33. Surface Roughening
34. Tree, Shrub or Windbreak Planting

Although the selected BMPs are not designed to eliminate dust emissions 100 percent, they were selected for their potential to reduce wind erosion and associated PM_{10}. Not all of the BMPs will work equally well on every farm because of variations in wind, soils, cropping systems, moisture conditions, and, in some cases, the management approaches of individual growers.

BACM - Summary

Because agricultural sources in the U.S. and locally vary by factors such as regional climate, wind strength and direction, soil types, rowing season, crop types, cropping systems, moisture conditions, water availability, and relation to urban centers, each PM_{10} agricultural strategy must be based on local

circumstances and a single BMP will not work equally well for all growers. In short, PM_{10} strategies in an agricultural context are highly dependent on specific local factors. Thus growers need a variety of BMPs to choose from to address the variety of factors that affect growing a crop.

In May 2000, the Agricultural BMP Committee adopted the agricultural PM_{10} general permit, which became effective by rule on May 12, 2000 (Arizona Administrative Code, Title 18, Chapter 2, § 610-611; see Attachment 3). The general permit requires that a commercial farmer implement at least one BMP to control PM_{10} for each of the following three categories: tillage and harvest, non-cropland and cropland. The general permit requires a commercial farmer to comply with the general permit by December 31, 2001. The implementation of a minimum of one BMP for each category currently fulfills BACM requirements. Because of the variety, complexity, and uniqueness of farming operations, the BMP Committee concluded that growers need a variety of BMPs to choose from and that requiring more than one BMP for tillage and harvest, non-cropland, and cropland may not be reasonable and could cause an unnecessary economic burden to growers. Although farmers are encouraged to implement more than one BMP for tillage and harvest, non-cropland, and cropland, it is not reasonable to require more than one BMP because in some instances one may be enough for a particular farm.

There is also a limited amount of scientific information available concerning the effectiveness of some BMPs at reducing PM_{10}. The BMP Committee balanced this limitation with the common sense recognition that the BMPs would reduce wind erosion and/or the entrainment of agricultural soils, thereby reducing PM_{10}. However, limited scientific information prevented the BMP Committee from requiring more than one BMP because it could not determine that requiring more than one BMP would be reasonable given the cost and emission reduction uncertainties. Instead, the BMP Committee and ADEQ committed to monitor the effectiveness of the BMPs and adjust the program, if needed, in the future.

There are only two PM_{10} nonattainment areas in the US that are currently requiring agricultural sources to reduce PM_{10} emissions. South Coast Air Quality Management District (SCAQMD), which includes the agricultural areas of western Riverside County and the Coachella Valley, is implementing Rules 403 and 403.1 to reduce PM_{10} emissions from agricultural sources.[25] AAC R18-2-611 represents the only other measure in the US that requires the implementation of BMPs to reduce PM_{10}. Because of this narrow geographic focus, there is only a limited amount of information available concerning the effectiveness and cost for practices that would reduce PM_{10} in Maricopa County. Given the variety of BMPs and farming

[25]In SCAQMD's 1997 Air Quality Management Plan control measure summary and its staff report for the proposed amended Rule 403, SCAQMD estimated emission reductions from only two control measures combined: mandatory cessation of tilling on high wind days combined with the implementation of vegetative cover. The analysis estimated 9.0 tons per day emission reductions from SCAQMD's Rule 403 agricultural provision [specifically, Rule 403(h)(1)(B)] in 2006 and 2010.

operations, it would take a significant influx of money and years of additional research to develop the necessary cost and emission reduction estimates necessary to justify additional requirements beyond AAC R18-2-611.

Most Stringent Measures - Identification of Agricultural Related Sources and Potential Control Measures

Section 188(e) of the CAA allows a nonattainment area to request an extension from attainment for up to five years. One requirement is that the serious area plan include MSMs that can be feasibly implemented in the nonattainment area.

To address this requirement, MAG used a three phase process to: 1) search for, identify and evaluate candidate measures, 2) assess the feasibility of implementation, and 3) develop a plan which includes commitments to implement those measures determined to be feasible.[26]

The methodology used to identify and evaluate potential MSMs consisted of five steps:

1. Search for MSM candidate measures;
2. Develop selection protocols;
3. Screen non-Maricopa County measures to determine MSM candidates;
4. Compare Maricopa County measures to similar non-Maricopa County measures to identify MSMs; and
5. Evaluate MSM impacts.

The following table presents a summary of the agriculture related measures after step 3, the related Maricopa County nonattainment area measure (if one exists), the most stringent measure determined to be either under consideration or included in another state's SIP, and appropriate rule references:

Measure	Maricopa County Nonattainment Area Measure (Rule) as of 1998	Most Stringent Measure Either in or Under Consideration for Inclusion in Another SIP as of 1998

[26] A detailed description of the process undertaken by MAG is included in the Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area, February 2000. Chapter 10. Page 10-25 thru 10-64 and Volume Four, Appendix C, Exhibit 4.

Soil conservation requirements of the U.S. Food Security Act	none	Implement approved soil erosion control plan by 1/1/99 for agricultural operations greater than 10 acres in size [SC* 403(h)(1)]
Restrictions on tilling or soil mulching	none	Cease agricultural tilling or soil mulching activities when wind speeds exceed 25 mph unless high winds have prevented tilling for more than 6 hours during the previous 2 days or for more than 60 hours since the beginning of the month [SC 403.1(d)(4); SC 403.1(h)(4) - Coachella Valley only]
Fallow field treatment	none	Implement approved soil erosion control plan by 1/1/99 for agricultural operations greater than 10 acres in size [SC 403(h)(1)]
Require comprehensive dust control plans for farms > 640 acres	none	Implement approved soil erosion control plan by 1/1/99 for agricultural operations greater than 10 acres in size [SC 403(h)(1)]
Reduce emissions of ammonia and nitrates from agricultural operations	none	none

* SC = South Coast (California) Air Quality Management District

After applying steps 1 through 4 to 1,000+ measures, only fourteen non-Maricopa County measures were deemed to be MSMs. Two of the fourteen MSMs were identified for agriculture: (1) cessation of high wind tilling and (2) agricultural soil erosion plans. The Maricopa County PM_{10} emission inventory impact and cost-effectiveness ratio associated with each of the two most stringent measures are:

Control Measure	**PM_{10} Reduction in 2006**	**Cost Effectiveness of PM_{10} Reduction ($/m-ton)**
1. Cessation of High Wind Tilling	0.06 mtpd	$ 1,720
2. Agricultural Soil Erosion Plans	0.11 mtpd	$ 220,000

1. Cessation of High Wind Tilling

At the time of Sierra Research's 1998 analysis, the most stringent measure regulating agricultural activities was South Coast Air Quality Management District (AQMD) Rule 403.1, Section (d)(4).[27] The applicability of Rule 403.1 is limited to the Coachella Valley PM_{10} nonattainment area, where high-speed gusting winds and wind-entrained sand and dust storms are a periodic occurrence. Section (d)(4) requires that agricultural tilling and soil mulching activities cease when gusting wind speeds exceed 25 miles per hour unless such activities qualify for an exemption under one of several meteorological circumstances. Wind speed determinations can be made by monitoring wind velocities at the site of operation in compliance with AQMD performance and operational specification, or by monitoring daily AQMD forecasts of high-wind days.

The Coachella Valley typically experiences high winds on 47 days of the year.[28] These days are concentrated in a high-wind season that extends between April and June. The ban on tilling during high - wind days applies throughout the year and throughout the Valley. South Coast Rule 403.1 exempts tilling on precipitation days, on days when tilling has been banned for the previous two days or for sixty hours since the beginning of the month, and under circumstances where tilling a field will reduce windblown fugitive dust emissions during future high-wind events.

The restriction for activities on high wind days in ADEQ's rule also applies year round. According to an analysis conducted by Sierra Research, postponing tilling on high-wind days would reduce PM_{10} emissions by 72 percent on those days.[29] Because only 15 percent of the Maricopa County PM_{10} nonattainment area tilling occurs during the high-wind season (March through September), and because only 3.7 percent of high-wind season days are actually high-wind days (with hourly average wind speeds of 15 miles per hour or greater for one hour or more), air quality benefits produced by postponing of tilling on high-wind days are small (0.08 metric tons of PM_{10} per average annual day in 1995). At the time that the Sierra Research analysis was conducted, Sierra Research estimated that by 2006 the number of acres devoted to agricultural production in the Maricopa County nonattainment area was projected to decline by 26.7 percent from 277,000 acres harvested in 1994 to 203,000 acres. The benefits of this measure will correspondingly decline to 0.06 metric tons of PM_{10} reduced per average annual day.

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[27]Other than Arizona's Agricultural PM_{10} General Permit, there have been no new agricultural related MSMs developed by South Coast or any other part of the country since the 1998 analysis.

[28]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area, February 2000. Appendices Volume Four. Appendix C, Exhibit 5: Most Stringent PM_{10} Control Measure Analysis. Prepared for Maricopa Association of Governments. Prepared by Sierra Research, Inc. May 13, 1998. pp. 4-21 thru 4-23.

[29]Ibid

In addition, MAG estimated that there were a total of 37 hours with a wind speed greater than 15 mph and 11 windy days (mean wind speed greater than 15 miles per hour) in 1995 in the Maricopa County area.[30] Wind speed in the summer is often less than five miles per hour. South Coast AQMD requires cessation of high wind tilling when gusty wind speeds exceed 25 mph. No research currently exists which demonstrates that cessation of high wind tilling when gusty winds exceed 25 mph in the Maricopa County area is more effective at reducing PM_{10} than the agricultural PM_{10} general permit which requires commercial farmers to implement at least one BMP to control PM_{10} for the each of the following three categories: tillage and harvest, noncropland, and cropland.

2. Agricultural Soil Erosion Plans

Since the *Most Stringent PM_{10} Control Measure Analysis* was completed in 1998, two significant program changes have occurred in the Maricopa County PM_{10} and South Coast nonattainment areas:

1. In May 2000, the Agricultural BMP Committee adopted the agricultural PM_{10} general permit, which became effective by rule on May 12, 2000 (Arizona Administrative Code, Title 18, Chapter 2, § 609-611; see Attachment 3). The general permit requires that a commercial farmer implement at least one BMP to control PM_{10} for each of the following three categories: tillage and harvest, non-cropland and cropland. There are 34 BMPs (10 for tillage and harvest, 10 for non-cropland, and 14 for cropland) to select from, including limited activities on high wind days and reducing fugitive dust from fallow land.

2. South Coast Air Quality Management District Rule 403 (fugitive dust) was revised to include an agricultural provision which took effect July 1, 1999, for the South Coast Air Basin and encourages voluntary implementation of conservation practices in order to maintain an agricultural exemption from other Rule 403 requirements.

A detailed comparison of the current South Coast Rule 403 and the agricultural PM_{10} general permit is presented below. A listing of the comparable features from the two rules is listed in Table 1. A comparison of the different management practices is listed in Table 2.

[30]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Appendices Volume Two. Appendix A, Exhibit 7: Revised Technical Support Document for Regional PM_{10} Modeling in Support of Revised MAG 1999 Serious Area Particulate Plan For PM_{10} For the Maricopa County Nonattainment Area, Appendices Volume Two, February 2000. Appendix II, Exhibit 7.

Table 1: Comparison of Program Features

Program features	**Agricultural PM_{10} general permit; Maricopa County PM_{10} Nonattainment Area (R18-2-611)**	**South Coast Air Quality Management District Rule 403 agricultural provision**
General Applicability	10 or more contiguous acres of land used for agricultural purposes located within the Maricopa County PM_{10} nonattainment area	Agricultural operations that have more than 10 contiguous acres located within the South Coast Air Basin
Approach	General permit by rule requires implementation of a minimum of three best management practices; one for each of the following categories: tillage and harvest; cropland; and noncropland	Voluntary implementation of the listed conservation practices to maintain exemption from all Rule 403 requirements
Exempted categories	none	Orchards, vine crops, nurseries, range land, and irrigated pasture
Technical justification waiver	none	If a farmer cannot apply the required conservation practices or verifiable alternatives, he may be able to submit a technical justification statement for waiver
Best Management Practices Categories	Tillage and harvest activities Cropland (includes fallow fields and turn rows) Noncropland (includes land no longer suitable for production, farm roads, ditches, equipment and storage yards)	Active (applicable to agricultural activities involved in disturbing the soil) Inactive (applicable to agricultural sites when no soil disturbance activities are being conducted) Farm yard area Track-out Unpaved roads Storage piles

Table 1: Comparison of Program Features

Program features	**Agricultural PM_{10} general permit; Maricopa County PM_{10} Nonattainment Area (R18-2-611)**	**South Coast Air Quality Management District Rule 403 agricultural provision**
Number of practices identified for each category	tillage and harvest - 10 cropland - 14 non-cropland - 10 Total = 34	active - 4 inactive - 9 farm yard area - 4 track-out - 3 unpaved roads - 4 storage pile - 4 Total = 28
Minimum number of practices required to be implemented	tillage and harvest - 1 cropland - 1 non-cropland - 1	active - 1 in addition to cessation of tilling and soil preparation when winds are over 25 mph inactive - 3 farm yard area - 1 track-out - 1 unpaved roads - 1 storage piles - 1
Record keeping	Maintain record detailing the BMPs implemented for each category - must provide to ADEQ within two business days of request	self-monitoring form
Compliance Schedule	December 31, 2001	June 30, 1999

Table 2: Comparison of Approved Practices

Agricultural PM_{10} general permit best management practices (AAC R18-2-611)	**Category**	**South Coast AQMD Rule 403 conservation practices**	**Category**
Limited activity during a high wind event (> 25 mph) (no tillage or soil preparation)	tillage and Harvest	Activity modification - cease tilling and soil preparation when winds are over 25 mph	Active

Table 2: Comparison of Approved Practices

Agricultural PM_{10} general permit best management practices (AAC R18-2-611)	**Category**	**South Coast AQMD Rule 403 conservation practices**	**Category**
Reduced tillage system	tillage and Harvest	Minimum tillage	Active and inactive
Tillage based on soil moisture	tillage and Harvest	Soil moisture monitoring	Active
Multi-year crop	tillage and harvest and cropland	–	–
Timing of a tillage operation	tillage and harvest	–	–
Reduced harvest activity	tillage and harvest	–	–
Chemical irrigation	tillage and harvest	–	–
Combining tractor operations	tillage and harvest	–	–
Equipment modification	tillage and harvest	–	–
Planting based on soil moisture	cropland	Soil moisture monitoring	Active
Mulching	cropland	Mulching	Active
–	–	Irrigation system	Active
Cover crop	cropland	Cover crop	Inactive
Permanent cover	cropland		
Residue management	cropland	Crop residue management	Inactive
Surface roughening	cropland	Surface roughening	Inactive
Cross-wind ridges	cropland	Ridge roughness	Inactive
Cross-wind stripcropping	cropland	Cross wind stripcropping	Inactive
Cross-wind vegetative strips	cropland		
Sequential cropping	cropland		
Tree, shrub or windbreak planting	cropland	Field windbreaks	Inactive
Artificial wind barrier	cropland	Wind barriers	Inactive
–	–	Local jurisdiction ordinance	Inactive

Table 2: Comparison of Approved Practices

Agricultural PM_{10} general permit best management practices (AAC R18-2-611)	**Category**	**South Coast AQMD Rule 403 conservation practices**	**Category**
Critical area planting	noncropland	Vegetation	Farm Yard
Synthetic particulate suppressant	noncropland	Dust suppressants	Farm Yard
		Chemical Stabilization	Storage pile
–	–	Disturbed Surface Area Reduction	Farm yard
Aggregate cover	noncropland	Surface Modification	Farm Yard and unpaved roads
		Unpaved road treatments	Unpaved roads
Track-out control system	noncropland	Track-out area improvements	Track-out
		Track-out prevention	Track-out
–	–	End of row equipment turn around areas	Track-out
Reduce vehicle speed	noncropland	Speed control	Unpaved roads
Access restriction	noncropland	Access restriction	Unpaved roads
Manure application	cropland and noncropland	–	–
Watering	noncropland	Watering	Storage pile
Tree, Shrub or Windbreak planting	noncropland	Wind Sheltering	Storage pile
–	–	Covering	Storage pile

MSM - Summary

It is important to note that because agricultural sources in the United States vary by factors such as regional climate, soil type, growing season, crop type, water availability, and relation to urban centers, PM_{10} agricultural strategies must be based on local circumstances. Unlike stationary sources, which can have

many common design features, whether located in California or New Jersey, agricultural sources and activities vary greatly throughout the country. In short, PM_{10} strategies in an agricultural context are highly dependent on specific local factors. Because of the limited number of high wind days in the Maricopa County area, it seems plausible that more PM_{10} reductions will be achieved by implementing practices which control PM_{10} emissions throughout the year or during critical erosions periods.

The agricultural general permit cannot mirror South Coast Rule 403 for a variety of reasons. One main reason is that agriculture in the Maricopa County area is primarily flood irrigated. The South Coast area has dryland, irrigated, and sprinkler irrigated agriculture. The actual amount of irrigation water and frequency of irrigation can effect wind erosion estimates and the effectiveness of different control measures under different climatic conditions. Therefore, the BMPs for Maricopa County were based on practical applications during those times when the fields were not flooded. Also, because the application of more than one BMP at a time for a selected category would only provide for incremental PM_{10} reductions, sometimes at an uneconomical cost, flexibility was provided in the rule to allow the expert (the farmer) to decide what BMP should be applied when and where.

C) Contingency Measures

Section 172 (c)(9) of the Clean Air Act requires that SIPs provide for the implementation of contingency measures if the Administrator finds that the nonattainment area has failed to make RFP toward attainment or to attain the standard by the applicable deadline. The purpose of contingency measures is to ensure that additional measures beyond or in addition to the required control measures immediately take effect when the area fails to make RFP or attain the PM_{10} NAAQS in order to provide interim public health and welfare protections. Committed, implemented measures may be considered contingency measures if they are not needed to show attainment and do not hasten attainment. When triggered, the contingency measures must be implemented without further action by the State or EPA.

Annual Standard Contingency Measures

The attainment demonstration analysis contained in Chapter Eight of the MAG 1999 Plan for 2001, 2003, and 2006 do not reflect the implementation of the following committed measures: 1) Agricultural Best Management Practices, 2) Off-Road Vehicle and Engine Standards, 3) Clean Burning Fireplace Ordinance, 4) Additional Dust Control Measures (City of Tempe) and 5) Additional Dust Control Measures (City of Phoenix). These measures were not included because applying the measures would not result in the area reaching attainment any sooner. They are set to occur, however, with no action necessary from the EPA or the state. If a milestone goal is missed, these measures will provide additional emission reductions and protection of public health and welfare.

Agricultural BMPs are contained in the Revised MAG 1999 Serious Area Plan as a contingency measure with modeled emission reductions of 4.2 metric tons per day (mtpd) in 2006.[31] Chapter V of the Revised Annual Plan TSD describes the modeling methodology used to estimate the impact of each contingency measure.[32] The modeling methodology used to estimate the agricultural BMPs contingency measure assumed PM_{10} emissions from agricultural sources consist of two categories: (1) windblown dust from the disturbed soil and (2) emissions from harvesting and tilling activities. The analysis of the impact of agricultural best management practices consisted of estimating the impact on these two sources. The modeling methodology assumed 45 percent control for windblown emissions from agricultural fields and aprons and a compliance rate of 80 percent. Therefore, a net control of 36 percent was assumed. It was further assumed that one of the agricultural best management practices would be to prohibit high-wind tilling. Most of the assumptions associated with the analysis of eliminating high-wind tilling were obtained from the Most Stringent PM_{10} Control Measure Analysis (MSM report).[33] The MSM report indicated that postponing tilling on high-wind days to the next day would reduce high-wind tilling PM_{10} emissions by 72 percent on those days. It was further assumed that 15 percent of the tilling in Maricopa County occurs during the high-wind season (March through September). During the high-wind season, 3.7 percent of the days are windy. In addition, a compliance rate of 80 percent was assumed. Therefore it was assumed that the measure would control tilling emissions by 0.32 percent. The agricultural BMP contingency measure was modeled and the emission reductions were estimated to be 4.2 mtpd (2.0 percent) in the Year 2006.

In November 2000, the *Technical Support Document for Quantification of Agricultural Best Management Practice* (TSD)[34] was prepared. The TSD supports ADEQ's previous work by assessing the emissions from various agricultural practices and the potential impacts of agricultural BMPs for the Maricopa County PM_{10} nonattainment area. The work focused on agricultural emissions and implementation of BMPs for the April 1995 microscale design day with projections for 2006.

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[31]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Chapter Eight. pp 8-16 thru 8-19.

[32]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Appendices Volume Two. Appendix A, Exhibit 7: Revised Technical Support Document for Regional PM_{10} Modeling in Support of Revised MAG 1999 Serious Area Particulate Plan For PM_{10} For the Maricopa County Nonattainment Area, Appendices Volume Two, February 2000. Page V-62.

[33]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area, February 2000. Appendices Volume Four. Appendix C, Exhibit 5: Most Stringent PM_{10} Control Measure Analysis. Prepared for Maricopa Association of Governments. Prepared by Sierra Research, Inc. May 13, 1998.

[34]Technical Support Document for Quantification of Agricultural Best Management Practices, Final. June 8, 2001. URS Corporation and Eastern Research Group, Inc.

The TSD estimated emission reductions expected through compliance with the agricultural PM_{10} general permit. The total agriculture related emission reductions was calculated by adding the reduction expected from agricultural lands going out of production (i.e., approximately 37 percent of the daily emissions) to the range of BMP reductions. The range of BMP reductions were estimated by applying the BMP net control efficiencies (i.e., minimum, maximum, and mid-point) to the daily emissions for the crops subject to that BMP (minus the 37 percent reduction attributable to land going out of production). An overall emission reduction of 60.3 percent from the 1995 design-day emission is predicted based upon the mid-point BMP reduction. If the 37 percent land use reduction is not considered, the overall emission reduction due solely to BMP implementation is 36.6 percent.

Although the combined TSD reductions are greater than the Revised MAG 1999 Plan reductions, a couple of important differences exist between the basis for these emission reduction estimates that make a direct comparison infeasible. First, the TSD emissions (on which the reductions are based) are estimated for a specific design day (April 9, 1995), while the basis for the Revised MAG 1999 Plan is metric tons average annual day. Second, the emission reductions in the Revised MAG 1999 Plan assume implementation of only one BMP on tillage emissions (i.e., the effect of reduced tillage during high-wind days). However, the TSD reductions are based on the implementation of three BMPs (i.e., reduced tillage during high-wind days, combining tractor operations, and multi-year crops), each having different control efficiencies and applicability based on crop type. Third, the TSD includes emissions and reductions associated with travel on unpaved agricultural roads while the Revised MAG 1999 Plan does not consider this specific source nor any associated reductions. The combined effect of these differences results in a greater level of control in the TSD compared to the Revised MAG 1999 Plan for tillage and harvest, and unpaved road emissions for 2006. The reductions attributable to wind erosion control in both the TSD and Revised MAG 1999 Plan are virtually the same (i.e., 37.0 percent and 36.0 percent, respectively).

24-hour Standard Contingency Measures

In order to estimate RFP for the 24-hour Plan and to be consistent with the 24-hour Plan attainment demonstration, control efficiencies of 90% for road construction; 70% for vacant land and parking lots; and 60.3% for agriculture were used to estimated emissions in 2006.[35] [36]

[35]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area, February 2000. Appendices Volume Four. Appendix C, Exhibit 3: Evaluation for Compliance with the 24-hour PM_{10} Standard for the West Chandler and Gilbert Microscale Sites. Arizona Department of Environmental Quality. June 1999. pp 3-7 thru 3-9.

[36]Technical Support Document for Quantification of Agricultural Best Management Practices, Final. June 8, 2001. URS Corporation and Eastern Research Group, Inc.

The total emissions inventory for the design day (April 9, 1995) for road construction, vacant land, and parking lots at the West Chandler and Gilbert sites totaled 4,932 lbs. per day.[37]

In order to roughly approximate the application of controls to the entire region and enable comparison to the agricultural inventory and the Revised MAG 1999 Plan, each of the inventory values is multiplied times 360.[38] Then the control efficiencies for road construction and for vacant land and parking lots (90 percent and 70 percent, respectively) are applied to the regional emission estimate. The agricultural inventory and associated reductions detailed in the TSD are used here, as well.[39]

These are all design day values, and are thus representative of high wind days. MAG estimated that there were 11 windy days (mean wind speed greater than 15 miles per hour) in 1995 in the Maricopa County area.[40] Multiplying the daily emission reductions times 11 provides a reasonable estimate of annual emission reductions for these source categories. The annual totals are divided by 365 (days) to derive a comparable daily average emission reduction estimate consistent with the approach used in the Revised MAG 1999 Plan. The EPA has recommended that contingency measures provide the emission reductions equivalent to one year's average increment of RFP. The total RFP for the 24-hour standard estimate is 47.6 metric tons per day (mtpd), divided by 5 years to estimate the annualized emission reduction level needed for contingency measures for the 24-hour standard. Therefore, contingency measures that provide approximately 9.5 mtpd reduction in total PM_{10} emissions should be adopted to meet the EPA guidelines regarding contingency measure impacts. The following table summarizes the method used to determine RFP for the 24-hour standard:

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[37]Final Plan for Attainment of the 24-hour PM_{10} Standard. Maricopa County PM_{10} Nonattainment Area. Air Quality Division, Arizona Department of Environmental Quality in Cooperation with Maricopa County Environmental Services Department. May 1997. Appendix A: Maricopa County PM_{10} SIP Microscale Approach Technical Supporting Document. ADEQ and MCESD. p. 4-28.

[38]Regional multiplier = 360 [Maricopa County PM_{10} nonattainment area = 2,880 sq. miles divided by 8 sq. miles for West Chandler and Gilbert microscale sites]

[39]Technical Support Document for Quantification of Agricultural Best Management Practices, Final. June 8, 2001. URS Corporation and Eastern Research Group, Inc. pp. 4-3 thru 4-5

[40]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Appendices Volume Two. Appendix A, Exhibit 7: Revised Technical Support Document for Regional PM_{10} Modeling in Support of Revised MAG 1999 Serious Area Particulate Plan For PM_{10} For the Maricopa County Nonattainment Area, Appendices Volume Two, February 2000. Appendix II, Exhibit 7.

Source Categories	24-hour PM_{10} emission inventory (April 9, 1995; West Chandler & Gilbert (lbs./day)	Estimated Regional PM_{10} emission inventory (mtpd)	Percent Emission Reduction Expected in 2006 (mtpd)	Estimated Daily Regional Reduction (mtpd)	Estimated Annual Regional Reduction (mtpd)	Estimated Daily average emission reduction (mtpd)
Road construction	1,999	327.1	90%	294.4	3238.4	8.9
Vacant land	2,847	465.9	70%	326.1	3587.2	9.8
Parking lots	86	14.1	70%	9.9	108.4	0.3
Agriculture		1575.0	60.3%	949.7	10,446.7	28.6
Total	4,932					47.6

The 24-hour standard emission reduction estimate does not reflect the implementation the following annual plan committed control measure: Reduce Particulate Emissions from Unpaved Roads and Alleys. The Arizona Legislature, Maricopa County, and 19 cities and towns have submitted commitments to implement various programs to reduce particulate emissions from unpaved roads and alleys. Commitments were received from many jurisdictions to pave, gravel, or otherwise stabilize particulate emissions from unpaved roads. As indicated in Table 8-2 of the Revised MAG 1999 Plan, commitments to reduce emissions from unpaved roads and alleys provide approximately 12.19 mtpd (5.8 percent) reduction in 2006.[41] Chapter V of the Revised Annual Plan TSD contains the detailed information for each control measure quantified for numeric credit.[42] In general, this measure was modeled by the reduction in the number of unpaved miles assumed to be present in the nonattainment area. Because 9.5 metric tons per day (mtpd) is needed this measure suffices as a contingency measure for the 24-hour standard.

D) Public Education Initiative

After finalization of the agricultural PM_{10} general permit, ADEQ undertook an intensive farmer and public education strategy in a cooperative effort with the Governor s Agricultural BMP Committee, EPA,

[41]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Chapter Eight. Figure 8-1 and Table 8-2.

[42]Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area. Appendices Volume Two. Appendix A, Exhibit 7: Revised Technical Support Document for Regional PM_{10} Modeling in Support of Revised MAG 1999 Serious Area Particulate Plan For PM_{10} For the Maricopa County Nonattainment Area, Appendices Volume Two, February 2000. Page V-12.

Maricopa County Farm Bureau, Natural Resource Conservation Districts (NRCD), U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), University of Arizona Cooperative Extension, Arizona Cotton Growers Association, Western Growers Association, Maricopa County Environmental Services Department, and Maricopa Association of Governments. The primary goal of the education strategy was to assist commercial farmers, compliance inspectors, and the general public in understanding the relationship between dust, agriculture, and the general permit.

The Agricultural BMP Committee has informed the public and commercial farmers of the forthcoming compliance needs under the agricultural PM_{10} general permit by speaking at agricultural events and community meetings (Arizona Cotton Growers, Maricopa County Farm Bureau, and Western Growers Association quarterly and annual meetings, the Desert Ag Conference, etc.) during 2000 and 2001. To date, at least nine public presentations have been given, in addition to the 22 public meetings held by the Committee during development of the general permit. Information regarding the agricultural PM_{10} general permit has also been reported in several local newspapers (*Arizona Business Gazette, Arizona Daily Star, Mesa Tribune,* and the *Trading Post News*) and agricultural newsletters (Farm Bureau News, Arizona Cotton Growers Newsletter, Western Growers Association Newsletter).

A public education document entitled "Guide to Agricultural PM_{10} Best Management Practices Maricopa County, Arizona PM_{10} Nonattainment Area" (see Attachment 6) was developed to be used by individual farmers as they implement the BMPs and organizations who will be working with the farmers. The public education document underwent extensive peer review by farmer focus groups so that there was an understanding of BMPs and compliance options. The public education document includes an overview of the agricultural PM_{10} best management practices program, descriptions of the best management practices, suggestions for implementation, a sample record form that commercial farmers can use to document compliance, and photographs of specific BMPs to help illustrate applications.

In addition, a general information pamphlet entitled "How Agriculture is Improving Maricopa County's Air Quality" was developed (see Attachment 7). This general information pamphlet is intended to inform the general public and farmers about PM_{10} concerns and approaches being undertaken to address agriculture's contributions to PM_{10}.

To date, two educational workshops have been held. One in the east valley (Mesa, Arizona) on February 20, 2001, and one in the west valley (Avondale, Arizona) on March 1, 2001. Approximately 200 farmers attended these workshops. Additional educational outreach opportunities will be arranged in conjunction with other planned agricultural events in Summer and Fall 2001. The focus of the workshops was to explain the purpose of the general permit, the individual BMPs, record keeping requirements, and compliance options. Information was also provided regarding the history of agricultural PM_{10} emissions

and the law establishing the Governor's Agricultural BMP Committee. Dust control vendor booths and product/equipment demonstrations were set up in conjunction with the workshops to assist the farmers in selecting their BMPs. Educating commercial farmers about the BMPs is the primary goal of the education program because the general permit provides commercial farmers flexibility when choosing BMPs to select those that most effectively reduce PM_{10} from their unique operations. Air quality inspectors for the ADEQ, the agency in charge of enforcing this rule, attended at least one workshop to better understand the processes and the rule. ADEQ also plans to hold annual workshops to educate new commercial farmers, inspectors, and interested stakeholders.

E) Demonstration of CAA §110 Requirements

Section 110 (a)(2)(C) and Section 110 (a)(2)(E) of the CAA require enforcement of control measures through adequate personnel, funding, and authority under state law as necessary to "carry out" the SIP. Under ADEQ's air quality compliance program, major sources are inspected annually while minor sources are inspected every two to three years (commercial farms are considered to be minor sources). However, minor sources may be the subject of various initiatives during the year. If a particular sector (e.g., dry cleaners, portable sources) has evidenced problems in the prior year (e.g., failure to submit move notices by portable sources), ADEQ's Air Compliance Section implements initiatives to address the problem (e.g., seminars and workshops for the regulated community explaining the general permit requirements; individual inspections of all portable sources within a geographical area, mailings, etc.). In addition, compliance initiatives are developed to address upcoming or future requirements (e.g., new general permits) and include such actions as training for inspectors; development of checklists and other inspection tools for inspectors; public education workshops; targeted inspections; mailings, etc.

In the case of the agricultural PM_{10} general permit (AAC R18-2-611), a compliance determination inspection initiative will be developed within the first year (i.e., calendar year 2002). Working with various organizations (e.g., University of Arizona, Maricopa County Environmental Services Division), ADEQ's Air Compliance Section intends to select a certain geographical section of the nonattainment area (e.g., based upon farming density and/or other criteria) and perform compliance determination inspections. Depending upon the results of the inspection initiative, other initiatives may be developed.

In addition, ADEQ's Air Compliance Section has an internal performance measure that they must meet that requires response to all complaints as soon as possible, but no later than within five working days. Effective January 2002, ADEQ's Air Compliance Section will respond to agricultural related complaints within five working days. The Air Compliance Section will also develop a process whereby air inspectors of other organizations (i.e., Maricopa County Environmental Services Division or cities), should they observe or

receive a complaint concerning an alleged violation of the general permit, will notify the Air Compliance Section and an ADEQ air inspector will conduct a timely investigation.

ARS § 49-457 (I), (J), and (K) and AAC R18-2-611 (K) and (L) give ADEQ specific authority to address agricultural related complaints and details the compliance steps that ADEQ must follow related to the agricultural PM_{10} general permit. ADEQ's Air Compliance Section routinely updates its database to include information regarding complaints and enforcement actions, which will be utilized in future years to determine rule effectiveness.

In accordance with ARS § 49-457, if ADEQ receives an agricultural related complaint and it is determined that a commercial farmer is not in compliance with the agricultural PM_{10} general permit and the farmer has not previously been subject to an agricultural general permit related compliance order, ADEQ will issue a compliance order requiring the commercial farmer to submit a plan to the local NRCD.[43] The plan must specify the BMPs the farmer will use to comply with the general permit. If the farmer has previously been subject to an agricultural PM_{10} general permit related compliance order, the farmer will be required to submit a plan to ADEQ that specifies the BMPs that the farmer will use to comply with the general permit. If the farmer fails to comply with the plan submitted to NRCD or ADEQ, the director of ADEQ may revoke the agricultural PM_{10} general permit and require the farmer to obtain an individual fee based permit pursuant to ARS § 49-246.

ADEQ intends to formulate a memorandum of understanding with the NRCD to receive copies of plans submitted to the NRCD in order for ADEQ to correlate and cross-reference the information with any future needs.

ADEQ intends to fund the agricultural PM_{10} general permit program through resources currently allocated to the State's existing general permit and compliance programs. ADEQ anticipates a decreasing agricultural source population and, therefore, does not see the need for increased funding to administer the program (see Attachment 5, page 4-1). In 1998, there were approximately 600 growers farming approximately 300,000 acres of land in Maricopa County. An estimated 63 percent of the agricultural activity in Maricopa County occurs within the nonattainment area. Maricopa County is undergoing rapid urbanization with agricultural land being converted into other uses at a rate of approximately 37 percent by 2006 (see Attachment 5, page 4-1). As this urbanization continues, the amount of PM_{10} associated with

[43]ARS § 49-457 (I), (J), and (K) give ADEQ authority to issue a formal administrative order once noncompliance is documented and eliminates the informal administrative process of issuing a notice of violation prior to issuance of a formal administrative order.

agricultural land decreases because the amount of land being farmed within Maricopa County is shrinking.

Request for Action

With this submittal, ADEQ requests that EPA approve the agricultural PM_{10} general permit as a committed measure for the Final Plan for Attainment of the 24-hour PM_{10} Standard and a contingency measure for the Revised MAG 1999 Serious Area Particulate Plan for PM_{10} for the Maricopa County Nonattainment Area.